24. (Amended) The target of claim 9 wherein said [generally] disk-shaped section has two radially-inward steps proximate said outer periphery.

Remarks

The claims have been amended to overcome the Examiner's formal objections, by deleting the objectionable word "generally", as the Examiner suggested. The claims have been further amended for enhanced clarity.

On the merits, claims 9 and 23 have been rejected as obvious in light of the Japanese patent document of Fujitsu taken in combination with the U.S. Zejda patent. Other claims are rejected based on the Fujitsu/Zejda combination, further modified using Inoue and Wegmann et al.

In his analysis of Fujitsu, the Examiner correctly notes that Fujitsu shows a single-material, disk-shaped target, having planar surfaces, and at least one radially-inward step proximate the outer periphery. Also, the Fujitsu target has holes near the outer periphery. But, as the Examiner has recognized, these holes are not threaded, whereas the present claims recite threaded holes.

To provide background as to the importance of the threaded holes (or the lack thereof), it is essential to evaluate in more detail the structure that is shown by Fujitsu.

Specifically, the Fujitsu target, seen best in Fujitsu Fig. 2, is intended to be installed to a backing plate by inserting bolts through countersunk holes 14 in the target 11. The bolts are inserted from the sputtering (interior) surface of target 11, and then threaded into threaded holes in the backing plate 12. The bolts are then tightened until the bolt heads rest inside of the countersinks of the holes 14, clamping the target 11 to the backing plate 12.

The holes 14 which pass through the target 11, are not threaded because threads are unnecessary. In the Fujitsu structure, when a bolt is fully threaded into a hole 14 in the target 11 and backing plate 12 from the sputtering (interior) side, the head of the bolt rests against and mechanically engages the bottom of the countersunk opening of the hole 14, and it is this mechanical engagement that holds the target in place. There is no need to include threads in the hole 14 passing through target 11, since mechanical engagement of the bolt with the target 11 is already obtained by the interaction of the head of the bolt with the countersunk hole.

In fact, it should be appreciated that holes 14 passing through target 11 should not be threaded, as doing so would make it much more difficult to achieve tight mechanical engagement between the target 11 and backing plate 12. If there were any minor misalignment between the threads in the holes passing through the target 11 and the threads in the backing plate 12, this misalignment would prevent a threaded bolt from drawing the target 11 into engagement with the backing plate 12. If there were any such misalignment, torque applied to the bolt would merely translate into force applied between the head of the bolt and the threads in the target 11, rather than between the head of the bolt and the threads in the backing plate 12. By comparison, when the holes passing through the target 11 are not threaded, torque applied to the bolt always translates into force applied between the head of the bolt and the threads in the backing plate 12, clamping the target 11 to the backing plate 12.

To presumably motivate the inclusion of threaded holes in the Fujitsu target, the Examiner has incorporated the Zejda patent into his primary obviousness rejection. But with the foregoing background in mind, Applicant submits that a person of ordinary skill, whether or not referencing Zejda, simply would not put threads in the holes of the target shown by Fujitsu,

since doing so would not only be pointless but counter-productive.

Nor is it surprising that Zejda provides no help in redesigning Fujitsu, since the two references are, despite surface similarities, directed to totally different and in many ways incompatible applications. Applicant wishes to emphasize these incompatibilities, so that the Examiner will not be tempted to launch an extensive exercise of creating increasingly elaborate modifications of Fujitsu in light of Zejda (or vice versa), disregarding the purposes and goals of the Fujitsu and Zejda structures, in the hope of finding a combination of parts and configurations similar to what Applicant has claimed.

As the Examiner has noted, the Fujitsu device is a magnetron sputtering device, in which a magnet is brought into close proximity of the rear side of the target/backing plate assembly, to produce beneficial magnetic fields over the sputtering surface of the target. This means that there must be clearance for the magnets to approach the rear side of the target. It also means that the magnets and accompanying mechanism will crowd the rear side of the target/backing plate assembly. To accommodate these issues, the Fujitsu device inserts the target mounting bolts from the sputtering (inner) side of the target. Because the bolts are inserted from the sputtering (inner) side of the target, rather than from the

backing plate (outer) side of the target, the bolt heads do not project into the vicinity of the magnets and as a result are more accessible (one does not need to move the magnet assembly aside to access the bolt heads) and there is also more clearance for the magnet assembly.

The Zejda device, in contrast, is used for non-magnetron sputtering of compact discs. Thus, the Zejda device has a donut-shaped target (compact discs are not sputtered in their central area), which does not have a magnet assembly on its rearward side. There are no magnets that need clearance to approach the rear side of the target, and there is no magnet mechanism crowding the rear side of the target/backing plate assembly. Under these circumstances, the Zejda device brings the bolts into the target from the backing plate (rear) side, which is an acceptable solution since there is no problem associated with the bolts projecting from the rear side of the target, and the bolts can be readily accessed.

Since the Fujitsu and Zejda devices are designed for radically different applications (magnetron vs. non-magnetron sputtering), and these applications have a profound impact on the positioning and manner of use of the target mounting bolts, Applicant cannot see any reason that these devices would be combined, or how a rational combination of the references, based

only on the references themselves rather than hindsight reconstruction of what Applicant has claimed, could arrive at anything in particular much less the specific structure that is recited in the present claims. If the Examiner proposes to make such a combination, Applicant respectfully requests that the specific, objective motivations for such a combination and the bases in these documents for those motivations be particularly spelled out so that Applicant has an opportunity to consider them and respond appropriately.

Applicant also notes the Examiner's citation of the Inoue and Wegmann documents with reference to some of the present dependent claims. While these references are not the primary bases for rejection, Applicant will comment briefly upon them.

As to Inoue, the Examiner's remarks are directed to Fig. 2 of that patent, which shows a single-material target bolted to a chamber. Applicant would note, however, that in essence the structure of Fig. 2 is no different from that of Fujitsu, in that it shows a target with unthreaded holes mechanically bolted to a chamber by bolts inserted from the sputtering (inside) surface of the target. Fig. 2 thus brings one no closer to the claimed invention than Fujitsu does. Furthermore, Applicant would note that the single-material target Fig. 2, on which the Examiner relies, is illustrated as prior art

by Inoue, and the background of the Inoue patent criticizes this target for its poor cooling features. Inoue teaches that the structure of Fig. 3, which is not a single-material target, is a superior structure. Inoue thus actually teaches away from a single-material target, rather than teaching toward one as the Examiner supposes.

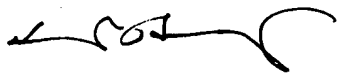
Wegmann is cited only for showing multiple radially inward steps on the periphery of a target. It goes no further to showing the concepts absent from Fujitsu, Zejda or Inoue identified above, and so needs no further comment.

In conclusion, Applicant resubmits that none of the cited references show the claimed combination of features. More specifically, none of the cited references show or suggest a single-material target with a radially-inward step and threaded holes, the combination of which (cross referencing the points made in Applicant's previous response) permits the target to be used as shown in the present application with a magnetron closely coupled to the rear of the target and spanning substantially the entire sputtering surface of the target.

If any petition for extension of time is necessary to accompany this communication, please consider this paper a petition for such an extension of time, and apply the appropriate extension of time fee to Deposit Account 23-3000. If any other

charges or credits are necessary to complete this communication, please apply them to Deposit Account 23-3000.

Respectfully submitted,



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